



# Science News-Letter

*The Weekly Summary of Current Science*

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GEOGRAPHY

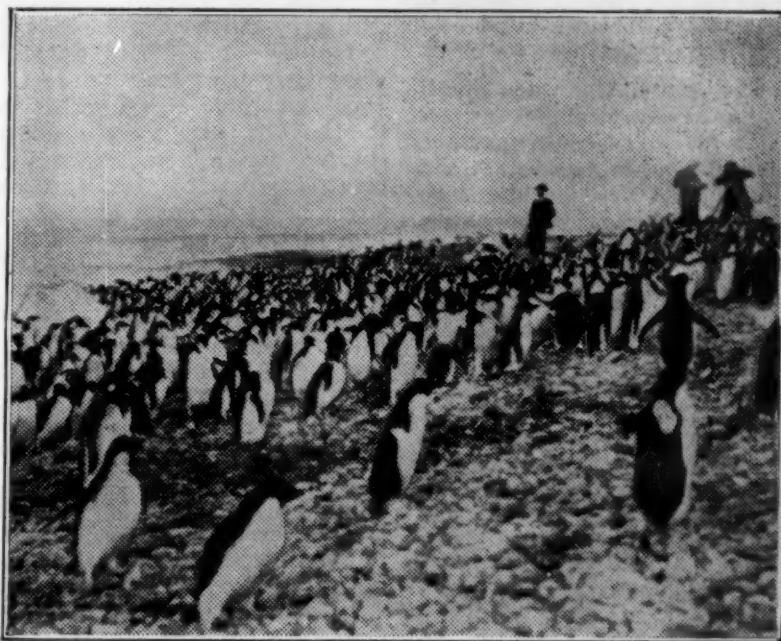
## Byrd's Hops Will Explore Mystery Land

The most isolated corner of the globe—a land as mysterious as the mountainous face of the moon—at last is on the point of yielding to science the secrets of its icy peaks and blizzard-swept plains.

When the whir of Commander Richard E. Byrd's motors sounds over the Antarctic continent the bold aviators will look down on a landscape apparently as foreign to this planet as the surface of Mars and probably with many points of similarity. Northern Greenland, the Sahara desert, the icy Himalaya heights or the black rocks of Spitzbergen are desolate enough and seem far removed from village church spires and cultivated fields of the civilized world.

But in the final analysis desolate Spitzbergen is far more closely related to the United States or Europe than Antarctica. All these barren areas abound with life, even in winter. But the great land mass about the South Pole is almost truly lifeless. Life is confined to the lowest forms and even these are rare. There is one degenerate type of insect found in the interior. Fungi and lichens grow in isolated patches. There is not a single worm, mollusc, reptile, bird or mammal from the shores of the Antarctic sea to the pole. All living things are left behind a few miles from the coast. Death is king of Antarctica. The ice-jeweled mountains are his palaces and the snow plains his fertile fields.

Science, however, has a particular interest in the dead continent. The high rock walls of its mountain passes are expected to reveal, through fossils, an important chapter in the past history of the world. For at one time Antarctica, then covered with semi-tropical forests and abounding with life, may have served as a land bridge around the world by which species were distributed. The airplane seems to afford the only



*THE LITTLE PEOPLE OF ANTARCTICA. The beaches of the southern continent sometimes are literally covered with these curious birds, the penguins, who act strangely like humans*

means of transportation by which geologists and paleontologists can obtain the rock specimens needed to reconstruct the picture.

Like the land masses of the Arctic, this Antarctic continent once had a prolific vegetation and at least a sub-tropical climate. This is shown conclusively by coal deposits, specimens of which have been brought back by several expeditions, notably that of Sir Ernest Shackleton which penetrated to within 97 miles of the pole before it was obliged to turn back. Coal indicates great forests of seed ferns and club mosses in carboniferous times.

The causes of the radical change in circumpolar climates remain obscure despite various ingenious theories advanced in recent years to account for them. No explanation seems to satisfy all the requirements.

Perhaps the most striking is the continental drift theory proposed by the German physicist Wegener which places Antarctica near the equator at some period in the world's history when the South Pole was located somewhere over the Indian Ocean.

But the mystery is deepened further by a peculiar distribution of animals, birds and plants. Take, for example, the marsupials or pouched animals. They form, with one or two exceptions, the sole mammal types of Australia, New Zealand and Tasmania and their best-known representative is the kangaroo. Then they skip Asia, Africa and Europe altogether and reappear in America in the form of the opossum. How did they bridge the gap?

A similar problem is afforded by the ostrich type. It is represented

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## To Explore Mystery Land

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in Australia, South Africa and South America in a way strongly suggestive of an easy means of passage from one continent to another. Again the blood-thirsty New Zealand kea, the world's champion sheep-slayer, is a close relative of some of the beaked parrots of South America.

If fossils of intermediate types of marsupials, ostriches and beaked parrots, to say nothing of certain plants, are found in the icy rocks of Antarctica they will constitute strong evidence that the world's seventh continent once was a connecting link between Africa, Australia and South America or may even lead to the conclusion that these four continents once constituted a single land mass. Moreover such a discovery would force a revision of some classical ideas in geology. It is worthy of note that the marsupials and the ostriches are low types in the mammal and bird worlds. They probably were evolved quite early. If such fossils are not found, a convenient explanation of the distribution of species will be shattered for biologists. They are, geologists will have a difficult problem on their hands.

The lifelessness of Antarctica is a striking example of the absolute dependence of life on a few degrees of temperature and the delicate balance which is struck in the clockwork of the world. The continent never has the extremes of temperature reported by Arctic explorers. A mark of minus 50 Centigrade seldom is reached in the middle of the Antarctic winter while Arctic temperatures may fall to -70 and -80. The expeditions of Scott, Shackleton and Amundsen, which wintered on the continent, never suffered greatly from intense cold. On the other hand, Antarctica seldom has days much above freezing while the Arctic summer has many pleasant weeks

with days which occasionally are uncomfortably hot. The soil of the West Greenland coast thaws in late June and July several inches below the surface and the hillsides are covered for a few weeks with a magic carpet of brilliant colors. Great herds of musk oxen graze on lush pastures during the summer in the valleys of Axel Heiberg land and Ellesmere land. But on the Antarctic continent the soil never thaws to a sufficient depth or for long enough at a time to allow seeds to germinate. Without plant life there can be no animal life. An explorer lost in the Arctic might survive there for an indefinite period, even in winter, if he had a hardy constitution and was a good rifle shot. A handful of Eskimos have maintained life on the northwest Greenland coast for generations. But man or animal astray in Antarctica starves. No amount of ingenuity enables him to find a mouthful to eat—unless life could be maintained for a few weeks on the mosses.

On the coast of Antarctica in summer life abounds. But it extends only a few miles inland. The rocks sometimes are white with those curious, human-like birds, the penguins, and explorers have to kick them out of the way to land. Other seabirds, such as the skea gull, rear their young in the rocks. One variety of seal, the sea leopard, is common. Whales, as is well known, abound in the waters and constitute the only economic reason for an invasion of the southern seas.

The possibility of mineral resources in Antarctica, particularly precious metals, long has been a favorite topic for geographical romancers. It is difficult to imagine such a large land mass without some valuable deposits. But the fact remains that nobody knows whether they are there or not. The aviators may run across them, but the prac-

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## GEOLOGY

## SEISMOLOGY

## MEDICINE

## In Canada's "North Country"

Two eras of the conquest of America's natural resources lie side by side in Canada's "north country."

From Cochrane, the railroad junction point that lies a hundred miles from the lower end of Hudson Bay, prospectors still go out into the "bush" to pit their knowledge and luck against nature's secretiveness. During the short summer season the great northern part of the Canadian province of Ontario is spotted with geologists, engineers, and plain self-taught mining men searching for rocks rich in gold, silver, copper or other valuable mineral. Hundreds of square miles of territory are still inadequately explored.

Yet great modern industrial plants and pleasing towns exist within a mere thirty-five miles of the place where these prospectors outfit. At Timmins there is the largest gold mine in the western hemisphere and the world's second largest. At Iroquois Falls there is a great paper mill that converts forests into newspaper at the rate of 525 tons a day. Over the Quebec border but not much farther away is Rouyn, a new copper-gold mining camp that is now in approximately the same state of development as that of some of the western mining boom towns forty years ago.

To this great mineral storehouse the Princeton University Summer School of Geology, traveling on the special car "Princeton," has paid a visit. Aided by the experts engaged in mining operations and with the cooperation of the Canadian Geological Survey, a selected group of students and professional geologists have inspected some of the mines, mills and the rocks which are now pouring forth wealth at the rate of about a hundred million dollars a year.

This mineral treasury is some 500 millions of years old at least, for it consists of rocks known to the geologist as "pre-Cambrian." Over the largest portions of the provinces of Quebec, Ontario and Manitoba there is a great shield of these pre-Cambrian rocks in which there have been found important areas rich in metals. Pre-Cambrian rocks are the oldest found on earth. In part of them there is no trace of life and in others the remains of a few extremely primitive plants and animals have been preserved. But the violent changes in these rocks, the rush of hot masses into them and the great pressures that such changes pro-

(Just turn the page)



FRANCIS ANTHONY TONDORF

## Watcher of Earthquakes

There is an ancient Maya legend, which relates that when the gods gathered to make man, each gave the new being a gift, and the *teule* of the earthquake gave him—his pulse. Ever since that legendary time, man has been intensely interested in the great uneasy pulse of the earth, that is often so terribly destructive to him and his works, and among the most fascinating of the many fraternities of science is that of the seismologists, who keep their fingers constantly on that pulse and try to read the riddles of its stirrings.

There is perhaps no seismologist in America better known to the public at large than Father Tondorf. The first reports of an earthquake anywhere invariably mention his reading of its story on his instruments at Georgetown University. It hardly seems like a fully authenticated quake until the seal of his pet Galitzin seismograph has been placed on it. It is frequently stated, and so far never disputed, that he has the best-equipped station of its kind in America; and in addition to his indefatigable personal work in his own cave Father Tondorf has taken an active part in the organization of the Jesuit Seismological Association, which makes available to the scientific world the results of the coordinated readings of dozens of instruments in universities and colleges scattered over the United States.

Francis Anthony Tondorf was born in Boston in 1870. He early felt the call to serve in the double capacity of priest and scholar, and after preparation at Woodstock became a member of the Society of

(Just turn the page)

## Pellagra Epidemic Threatens

Permanent relief for the pellagra outbreaks that have threatened the South whenever times are hard, may be one of the outcomes of the Mississippi flood. A farming program of diversified crops is the chief preventive for the deficiency disease that has broken loose in epidemic proportions in the inundated territory, according to the U. S. Public Health Service experts who have just completed a health survey of the flood area.

Modern preventive medicine that successfully warded off epidemics of typhoid, malaria, dysentery and smallpox in the flooded states has been powerless to check the spread of this poverty disease of unbalanced diet. Dr. Joseph Goldberger, nutrition expert, and Dr. Edgar Sydenstricker, statistician, declare that 2,300 to 2,500 deaths may be expected in 1927, an increase of from one-fourth to one-third over last year. The number of cases, they estimate, will run up close to 50,000.

Fresh lean meat, milk, cheese, green vegetables and eggs are the ammunition needed to prevent and cure this disease that has been an

(Just turn the page)

## PHYSIOLOGY

## Synthetic Thyroid Hormone

The chemical composition of the active principle of the thyroid gland has finally been completely established by Dr. C. R. Harrington and Prof. George Barger of University College, London.

These workers, who have received widespread recognition for their successful attempt to manufacture the hormone in the laboratory about a year ago, have definitely ascertained the position of the iodine atoms in the complex thyroxine molecule.

Clinical tests show that the synthetic product will reproduce the results of the natural thyroxine in cases of thyroid deficiency, the metabolic rate having been raised from minus 40 per cent, to normal in the course of a week by three or four intravenous injections of 4 to 5 milligrams on alternate days, it is stated in a report of the research to the scientific journal, *Nature*.

The production of thyroxine synthetically will assure a more standardized product and should have the effect of making the price much lower.

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## Pellagra Epidemic Threatens

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unwelcome accompaniment of financial depression in the South for many years. The increase of cases in 1926, a year of low cotton prices, was 80 per cent. over the year before. Over half the cases this year come within the confines of the flood states of Arkansas, Mississippi, Tennessee and Louisiana, a section where it has been prevalent ever since the disease was first recognized in 1908.

Diversified farming in these states will go far toward stabilizing the economic status of the tenant farmer and helping him to raise for himself a supply of proper food, the Public Health Service officials point out. The establishment of swine, cattle and poultry industries should be encouraged as well as community or plantation dairies and truck patches, they believe, if the poor white and negro population are to fend off inroads of pellagra in the future.

Immediate measures recommended are the supply of relief agencies in the flood areas with foods rich in pellagra preventing vitamins.

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African natives often hunt the hippopotamus for food.

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## Watcher of Earthquakes

(Continued from page 147)

Jesus. He has been a member of the faculty of Georgetown University since 1902.

In addition to the seismological work for which he has been chiefly noted, he has turned a ready hand to a dozen tasks at his university: physics, astronomy, geology, botany, zoology. But now he has been relieved of all extraneous tasks, and is free to devote his entire energy to the development of his beloved science of seismology.

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Germany exported almost 3,000 tons of thermometers last year.

A silencer for riveting machines is being tested out in Washington.

The biggest spiders found in Guiana have bodies over three inches long.

Nails cause injuries to 18,000 persons each year in New York State alone.

Dark rubber exposed to sunlight keeps its life longer than light colored rubber.

The Greeks and Romans covered the hulls of their fighting ships with iron plates.

A machine which plants individual grains of seed has been patented by an Austrian inventor.

Heart wood, the center of the tree, is more resistant to decay than the sapwood of the outer layers.

Use of umbrellas in Roman days was restricted to men and women of high rank and distinction.

The U. S. Forest Service has a collection of 60,000 range plants, representing over 6,000 species.

A recent Swedish law prohibits antique furniture made earlier than 1860 from being exported.

Mustard gas released several hours before naval battles may play a strategic role in future sea fighting.

Jamaica is attempting to establish silkworm culture and is planting mulberry trees to feed the worms.

Milk Island, off the coast of Gloucester, Mass., has been presented to the state for a wild life sanctuary.

## In Canada's "North Country"

(Continued from page 147)

duced were favorable to the concentration of gold, silver, copper and other minerals. This rich pre-Cambrian shield is interesting not only to the mining engineer and the prospector who hopes for riches but also to the geologist who is engaged in puzzling out the way in which the crust of the earth was formed.

One may logically expect to see gold in a gold mine. But in the Porcupine gold district it is possible to walk throughout miles of stopes and witness the whole milling process without seeing even a speck of the shining yellow metal. The inspection of a choice piece of ore through a magnifying glass may reveal a few bits of gold but the ordinary visitor would have little chance of finding out what sort of a mine he was visiting if he were not told. When it is realized that the average ore of the Hollinger mine at Timmins, for instance, runs only \$7 to \$8 a ton in gold value, with gold worth about \$20 an ounce, the reason for the invisibility of the metal in the ore is apparent. Since 6000 tons go through the crushers and intricate milling process of that mine each day, it will be realized that a considerable quantity of gold is being added daily to the precious metal vaults of the world.

To the rocks of the Cobalt district, Ontario's silver center, nature was more bountiful. In the mines around Cobalt, chunks of native silver can be seen and easily identified in choice veins. Here also silver is found in combination with other elements. Since silver sells now for about a fortieth of the price of gold, silver ore must have a much higher metallic content in order to make the mining profitable. Cobalt has been one of the most successful mining areas of the world and while its heyday is over it is still a big producer.

A blacksmith working by the side of a railroad cut discovered the first silver ore at Cobalt. That was only 25 years ago. The railroad was being pushed into the virgin country to open it for farming. Undoubtedly the silver producing ground had been tramped over by prospectors many times before the railroad construction revealed it.

Seeing miles upon miles of unsettled country raises the question as to how many other mines of precious metal lie hidden still in Canada's great "north country."

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## Building and Flying Model Airplanes

This is the fifth of a series of articles by Paul Edward Garber, telling how to make model airplanes. Mr. Garber is in charge of Aeronautics at the Smithsonian Institution.

### Making A Geared Winder

As you have discovered in flying your model airplane, winding the propelling rubber by hand is hard work. It was therefore suggested in the last article that a geared winder could be constructed from an egg beater. Obtain an ordinary egg beater such as sold at any hardware store. Preferably select one in which the large driving gear rotates between the two driven gears, and in which the beater shafts are firmly fixed in the frame. With such a beater in hand proceed to make your geared winder as follows:

In the drawing an ordinary egg-beater of the type desired is shown. It is to be cut where the dotted line indicates. This cutting may best be done by clamping the egg-beater in a vise and sawing through it with a hack saw. If you do not have the necessary tools, the use of them may be procured at a garage or machine shop. Having severed the beater, and cut the shafts, next pull the small gears and attached pieces of flat metal off of the shafts.

Where the dotted lines in Figure 1 indicate, drill holes through the metal strips, using a drill which will make a hole through which the gear shafts may pass. Bend the metal strips back of the holes, so that when bent inward they will appear as in Figure 2. The two holes must be in the same line. Now take a small piece of copper wire, or wire of any metal which can be easily

soldered; form two fittings like the one illustrated in Figure 2.

Procure two washers of the size that will have a hole like the holes you have drilled in the strips. Clean the shaft ends and also the washers and after placing the gears and their attached strips back on the shafts, solder the washers on the end of each shaft as shown in Figure 3. Care must be taken in this step, that the strips are not soldered also. Solder the wire fittings on the strips as shown in the same figure. These must be so placed that the pointed end will revolve as a point and not off center. This completes the winder.

Figure 4 shows a possible alternative whereby the wire fitting may be wired onto the strips, if these be made of aluminum, which can not be soldered as easily as other metals. If the constructor wishes to avoid soldering the washer as well, this may be retained by heating over the end of the shaft.

Many winders are used with the original handle, but some may desire a more comfortable grip. For them, the pistol grip shown in the drawing is suggested.

This winder is used by detaching the "S" hooks from the nose of the model, and hooking them to the wire fittings on the winder. Then, while an assistant holds the propellers, the person holding the winder walks away from the model until the rubbers are stretched at least twice their normal length. Rubbers hold more twists when stretched. He then turns the winder, noting that he must wind so that the propellers will revolve

correctly. If it is necessary for him to wind backwards in order to twist the rubbers correctly, he should invert the model and reattach the "S" hooks, so that he can wind in the easiest manner. As he winds the rubbers, he should slowly advance toward the model, so that as the rubbers are fully wound, he is working at the nose. The "S" hooks are then reattached to the model, care being taken to prevent the rubber strain from breaking the model frame. The model is then launched in flight.

Geared winders are a wonderful aid to the sport of model flying, and every model flier should make and use one.

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### AVIATION

#### More Power For Planes

The addition of two gears and a small "impeller" to an airplane engine now makes possible higher power at all altitudes, which in turn means higher speeds or heavier loads. This is accomplished with a built-in supercharger developed at the research laboratory of the General Electric Company, after the design of Dr. S. A. Moss, it was announced.

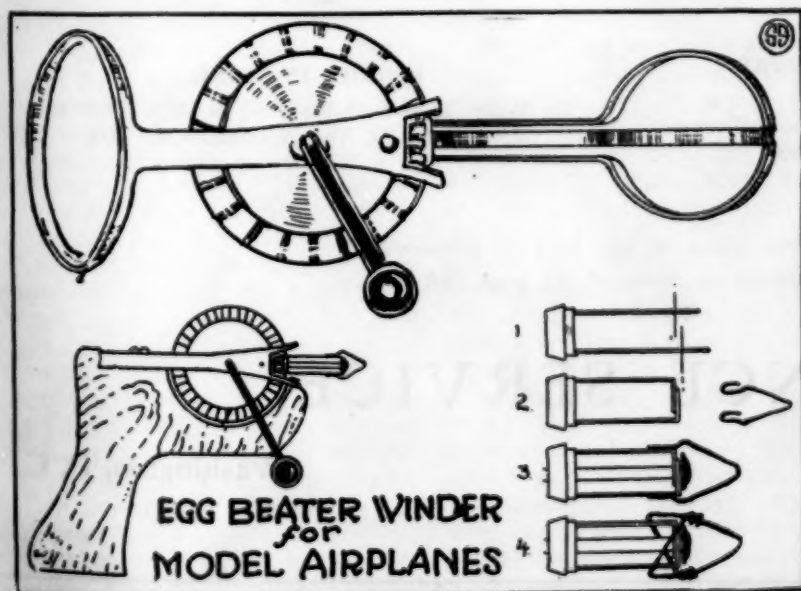
Previously, the supercharger has only been used extensively in military airplanes, and then only as an attachment, but now several large manufacturers of engines have adopted the new supercharger as an integral part of their motors built for commercial planes.

"The supercharger does exactly the same for the airplane engines as the oxygen tank does for the pilot when flying at high or unusual altitudes," stated Dr. Moss, "that is, it prevents suffocation. At 20,000 feet there is but half as much oxygen in the atmosphere as at sea level. Naturally an ordinary engine loses power rapidly as it ascends but with the supercharger in use, this is not the case."

The new device is being used on the Wright "Simoon" engine, and the newly developed "Cyclone" for heavy duty. These engines develop 350 horsepower and 550 horsepower respectively. The Pratt and Whitney "Wasp" and "Hornet" engines also use the device, and develop 425 and 550 horsepower. All these engines weigh from 1.3 to 1.6 pounds per horsepower.

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The Romans learned to use cotton through their wars in the East.



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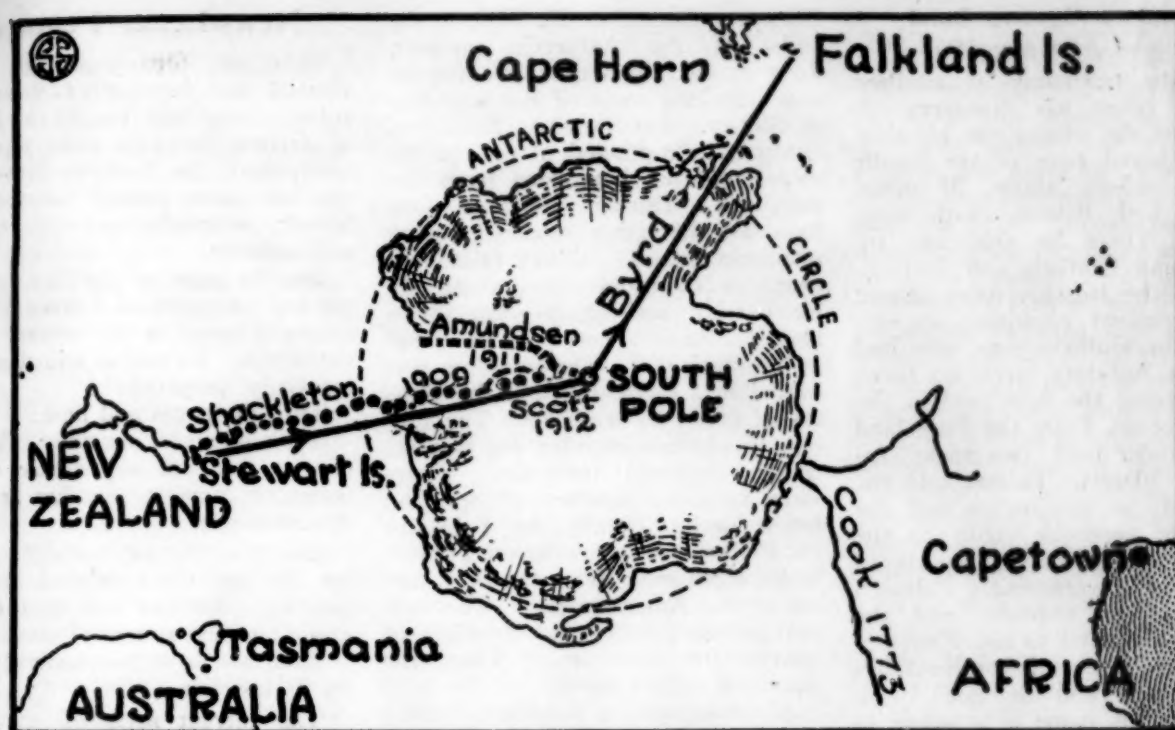
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ANTARCTICA, the land that Byrd and his flyers will penetrate. The route of the proposed expedition is shown by full line, while the dash lines show the routes of past Antarctic explorers. The distance from New Zealand to the South Pole is nearly 3,000 miles while the distance from the South Pole to the Falkland Islands is over 2,500 miles. On his flight from New York to France, Commander Byrd and his crew traveled over 3,500 miles. On the map the Antarctic circle is dotted. Byrd plans to lay down a base at Discovery Harbor, the place on the edge of the ice barrier at which other exploratory parties have had their headquarters.

### To Explore Mystery Land

(Continued from page 146)

tical impossibility of getting them out will render them valueless.

Commander Byrd's announced plan is to make flights in several directions over the interior to select landing places where stations can be established. From these points land parties will be able to work with geologists' hammers. This, according to those familiar with Antarctic conditions, is the only feasible plan of exploration. The continent can be penetrated by dog team. Robert Falcon Scott, the English explorer who died on his way out after reaching the pole, went in with Manchurian ponies. But explorers using such means of transportation have no time for leisurely side trips. The best they can hope for is to get in and get out alive. All their energy is required for the mere task of living.

The land mass of Antarctica is comparable to that of continental Europe—approximately 3,500,000 square miles. This vast area of desolation and death, forming a jagged circle around the South Pole, can be divided roughly into three circular zones. First the explorer must cross the great ice barrier. This is a level but rough plain of ice, broken up by apparently bottomless chasms and swept by terrible

blizzards. In the past the greatest difficulty has been encountered in crossing this area. The floor of this ice barrier in some places is a thousand feet above sea level. It opposes to the stormy Antarctic ocean an almost unbroken circle of high black cliff lashed by angry water. The elevation of this ice barrier long baffled all attempts even to land on the continental mass, to say nothing of making a dash for the pole, and the earlier expeditions had to content themselves with landing on small islands eight or ten miles away.

Beyond the coastal plain rise the mountains. Icy peaks which probably never will be scaled by man push their heads into clouds at altitudes of from 15,000 to 20,000 feet. Between the peaks there are dangerous passes crossing the range at 10,000 feet, into which motionless glaciers are jammed. Over the mountains comes the high plateau, 9,500 feet above sea level, a fairly smooth plain in the center of which is located the southernmost point on earth. The elevation of the mountains which must be crossed offers the most serious handicap to the aviator who seeks to reach the pole and he must recognize the fact that if he ever comes down human help is extremely unlikely. Scott and his party

became stranded and died on the ice barrier itself, within a hundred miles of the expedition's headquarters on the coast, in the middle of summer, and only a year later was an expedition able to get through to recover their bodies.

It is fitting that American aviators should be the first to open up the great southern land mass, for two American sailors share, rather than dispute, the honor of its discovery. Unfortunately, neither of them was able to land on the shores, so the flags of Great Britain and Norway float undisputed over a continent. The mountain peaks of Antarctica probably were seen for the first time in the distance by Capt. Nathaniel P. Palmer, a Yankee whaler from Stonington, Conn., in 1820. Without much question he first landed on the archipelago just off the continental mass which now bears the name of Palmer land, and his reports of high, smoking peaks in the distance to the south indicate that he actually looked upon West Antarctica. Palmer was more than a whaler. He was a conscientious explorer and continually went out of his way to add to geographical knowledge.

His exploits, however, only recently have been revived and his fame rests largely on the unusual gener-

(Just turn the page)

## To Explore Mystery Land

(Continued from page 151)

osity of the testimony of another explorer. After his discovery of Palmer land the whaler ran his ship into a sheltered cove of the South Shetlands, where about 20 other American and British craft were gathered. There he was met by Capt. Fabian Gottlieb von Bellinghausen of the Russian navy, leader of an organized exploring expedition into the southern seas, who had crossed the Antarctic circle six times and discovered the first land in the Antarctic ocean, Peter the First land and Alexander land, two rocky, insignificant islands. Palmer told the Russian of his discoveries and the latter gave generous credit to the American whaler in his reports to the Russian government. Palmer's standing as an explorer and the justice of his claim to the discovery of the world's seventh continent has been disputed and defended. On some maps his name is attached to a long strip of the continental coast and on others is left off altogether. His chief claim to fame is found in the journals of Bellinghausen.

The most generally recognized claim to the discovery of the Antarctic continent, or at least of East Antarctica, is that of Charles Wilkes, commander of the United States exploring expedition which sailed from Newport News in the autumn of 1838. This expedition was the first ambitious effort of the young republic to win a place for the Stars and Stripes in the annals of exploration somewhat comparable to that which had been achieved for Great Britain by the voyages of the celebrated Capt. James Cook. The expedition, financed by the government, was accompanied by the most distinguished American scientists of the day, including Richard Henry Dana, the geologist, and Asa Gray, the botanist. It sailed in five well-equipped ships, primarily for a voyage of discovery in the South Pacific, but also with orders to reach the most southerly point which had been reached by Cook a half century before.

Few expeditions have met with worse treatment at the hands of fortune. The results still are in dispute. Wilkes, then a naval lieutenant, was a man of little tact. He continually was quarrelling with the scientific personnel who claimed that he treated them like enlisted men. Moreover, his ships had not been equipped for contact with the ice pack.

The expedition went south from

Sidney on December 26, 1839, in the midst of the Antarctic summer. Four of the ships took the voyage south, leaving most of the scientists at Sidney. On January 19, Lieut. Hudson, in command of one of the ships, reported land seen from the masthead. During the next four days all the ships reported seeing mountain peaks. Wilkes sailed for nearly a thousand miles along the ice barrier, seeking in vain for a place to land. There was no break in the black cliff. The squadron was buried in a dense fog and the ships tossed about by tempests. The sailors, in clothes intended for tropical waters, suffered intensely. There were frequent rumbles of rebellion below deck. Finally, on February 14, Wilkes went ashore on a small island eight miles from the coast and set up the American flag. The sailors gathered rocks and handfuls of gravel for souvenirs. Then the squadron sailed north.

Simultaneously a French exploring expedition under Captain Dumont D'Urville was in Antarctic waters. D'Urville sighted land a few days after the Americans. Both commanders charted the coastline and the Frenchman gave French names to large segments. For the rest of his life he consistently denied that Wilkes had been in a position on January 19 in which he could have sighted land.

Both men charted the coastline. Wilkes' chart was inaccurate in many respects and a few years later the British expedition under Sir James Clark Ross with two ships, the Erebus and Terror, sailed completely over some of the land indicated on the American map. Ross, indeed, sailed far into the great gulf now known as the Ross Sea which runs to within 800 miles of the pole. The British commander always denied the existence of an Antarctic continent at all and believed that the South Pole could be reached by ship.

It was not until 1900 that the first landing was made on the Antarctic continent by the British Southern Cross expedition. Ten years later the Norwegian, Amundsen, and the Englishman, Scott, reached the pole within a month of each other. Amundsen encountered pleasant weather and a comparatively easy route there and back. Scott, beset by every sort of misfortune, perished.

Since then Antarctic exploration has attracted no attention and Byrd's men will be the first to land there, it is likely, since the remnant of Scott's party sailed for England.

Science News-Letter, September 3, 1927

## News-Letter Features

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The Egyptians made light boats out of papyrus.

Artificial silk conducts electricity as cotton does.

Columbus' voyage to America in 1492 required 69 days.

Pigs six feet high roamed in early prehistoric America.

One kind of bark beetle alone destroys over 15 million dollars' worth of timber in a year.



# America's Art Treasures

By PROF. R. V. D. MAGOFFIN

Prof. Magoffin is president of the Archaeological Institute of America.

Every now and then some American traveller returning from Paris, upon being asked what he thinks of the Louvre, opines in a patriotic way that it is not a patch upon this or that department store in his own home town. That type of visitor, however, is following the long, long trail of the dodo, and with that now mythical bird will soon vanish into the limbo of the unknown.

London and the British Museum, Paris and the Louvre, Munich and the Glyptothek, Rome and the Vatican and the Terme, Madrid and the Prado, Cairo, Constantinople, Athens, Berlin, Copenhagen, and their Museums are practically inseparable phrases. New York and the Metropolitan Museum of Art have long since belonged to the same category.

The fifth edition of the "Handbook to the Classical Collection" of the Metropolitan, which was published only the other day, has nearly twice as many pages and illustrations as the last edition two or three years ago, and brings one suddenly to the realization that the art and archaeology of ancient Greece and Rome can be seen, studied, and appreciated in New York on Fifth Avenue at 82d Street. Every year additions have been made to the collection; the daily press has never failed to mention or enumerate them. But it is the very many additions that have been made in the past ten years that fairly stagger one when he is brought face to face with them. Perhaps the most noteworthy thing about the classical collection is the evenness of it. The majority of foreign museums are known for their huge collections of this or of that; but, after all, the purpose, for which a museum is to be commended or assisted, is to exhibit a collection which is representative in character and selective in values.

Pericles said to the Athenians in his most famous speech, "We are lovers of beauty without extravagance." What he meant was that their art had inherent beauty, humanistic conceptions, restraint, sense of fitness, and simple directness, without sentimentality. The Athenians had about them at every turn objects of a kind which they thought, and rightly, were necessary for the education of their youth into a well rounded and well grounded

citizenship. That heritage of art appreciation is a gift which we of today are eager to share.

It was not many years ago that Helen of Troy belonged to the fancies of mythology and not to the facts of historical novels. Daedalus and Icarus in their aeroplanes and Theseus stringing the Bull of Minos were airy fairy films gliding before the eyes of imagination. But now we can go into the Prehistoric Greek Period room at the Metropolitan and get the very spots knocked out of our incredulity. The hurried visitor, or the one a bit intolerant of any art but the best, may dash through the room that has cases full of painted vases of the early Greek period in geometric style. But his dash has in it something of the early intolerance that visitors have for primitives in picture galleries. On a third or fourth visit the significance of beginnings takes hold of even the most hardened classical periodist. Well known decorative patterns catch the roving eye, types of vase shapes arrange themselves in historical precedence, colors of paint and firing on the pottery, stylistic character of terracottas and of bronzes force themselves into one's consciousness. Early Greece becomes a reality.

The majority of people, judging by the number of visitors, prefer early and primitive things to those that are archaic. Yet the Etruscan bronze chariot and the Panathenaic amphorae with their fine paintings of athletic events are well worth notice. But when the visitor arrives in the rooms where the art of the 5th century B. C. begins, he soon begins to recognize that there is a difference. He will marvel at the bronze statuette of a discus thrower, tense with muscular potentiality; at the bronze boy landing after his running broad jump; at a terracotta relief of the nurse washing the feet of her master of 20 years earlier, Odysseus or Ulysses. The vase painted by Euphronios in a Greek cylix, where Heracles with his club, his face peeping out of the jaws of the Nemean lion skin, hurries forward intent to complete another of his fabled labors, will attract attention. One will be surprised that so much of Greek life is told in the pictures on these fifth-century vases. One can see on one vase two women folding their clothes and perfuming them,

(Just turn the page)

## Cold Made Plant Evolution

The evolution of modern plants and of modern climates began together at the North Pole some six or seven million years ago, when the last of the dinosaurs were still lumbering about the earth. It continued with increasing speed through the Tertiary age which followed, until the comparatively recent time of the glaciers. It was during this time, according to the record of the rocks, that the plants of the earth began to show evidences of being divided into growth zones influenced by climate; until then, all the earlier plants were of types such as now grow in the tropics, and they were distributed evenly over the whole earth, indicating the prevalence of a uniformly warm climate.

Dr. Arthur Hollick of the New York Botanical Garden has outlined the evidence for this theory that the first temperate zone plant life evolved in the polar regions. The higher forms of flowering plants, he says, are primarily adaptations to a climate of alternating warm and cold seasons, and their final invasion of the still uniformly warm tropics has been recent and is a matter of competition with the plants they found there rather than a response to a climatic urge. And it is in the tropics today that the only relics of the vegetation of an earlier world, the cycads and similar plants remain to contest with the late-coming modern plants for a foothold. Plant fossils of Tertiary age from the tropics are very little different from the living plants of some regions, whereas Tertiary fossils from the regions of the earth where winter comes show evidences of radical and rapid evolution.

Science News-Letter, September 3, 1927

## PSYCHOLOGY

### Relatives Grade Alike

Good marks in school "run in families," if the grades of a hundred brothers and sisters in the University of Oregon are any testimony.

The records of related students selected from the period since 1919 were examined by Dr. R. R. Huestis, assistant professor of genetics, and T. P. Otto to test the principle that individuals of the same heredity brought up in the same environment react in the same way.

Brothers showed greater divergence than sisters while the girls had consistently higher grades than the boys, Dr. Huestis declared in a report of the test to the Journal of Heredity.

Science News-Letter, September 3, 1927

# BIOLOGY

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### America's Art Treasures

(Continued from page 153)

before they are to be put away. On another a seated bride receives her wedding gifts; on another is a boy playing a harp with seven strings, and singing to its accompaniment.

It is easy to linger over the Tanager figurines that belong to the fourth century B. C., because one sees in these statuettes of clay, six or eight inches high, the women of 2,400 years ago as if one saw them today. Here a lady is fixing her hair, there fully dressed for the street is another lady, her hat on her head, and her fan in her hand. Here and there some of the original color remains. It is a real discovery to find that the women wore clothes in those far off days as brightly colored as they do today. And although they all wear the same two under and outer garments, no two women ever drape or wear them the same way.

The bedroom of a Boscoreale villa from near Pompeii is the pride of the museum, and rightly. No one should fail to see it and admire its frescoes. They are in what is known as the Second or Architectural style of Roman wall painting (about 80 B. C.-79 A. D.), and the many storied buildings with balconies and colonnades will send the beholder away with a different idea of how Roman houses looked than he had ever before imagined.

Of the many statuary pieces, perhaps the fourth century B. C. head of an athlete is the most pleasing, although there is also a small marble relief of a man on horse-back which is very reminiscent of the wonderful pieces of the same kind on the frieze of the Parthenon. The court of Wing K and the jewelry room always excite both astonishment and admiration.

A few days at the Metropolitan Museum will amaze one and cause him to wonder whence all the visitors come. The American travellers who come back from Europe and "mirate" about the way the people over there visit their own museums, after visiting the Metropolitan today, are silenced.

Science News-Letter, September 3, 1927

Because so many kinds of marine animals are becoming extinct in Pacific coast waters, the sea front along the Scripps Institution of Oceanography has been protected by California law.



## NATURE RAMBLINGS

By FRANK THONE



96

### Children of Beelzebub

Beelzebub, Prince of Devils, was originally a god. It has always been the practice of a conquering people to dethrone the gods of the tribes they subdue, and cast them into the pit as demons. When the Children of Israel, fighting for Yaweh, irrupted into Palestine three thousand years ago, they did this to the numerous Baalim they found in possession there, and Baal-Zebub became Beelzebub.

There was nothing to lament about the fall of the Baalim, as the gods of the pagan Semites were generally called. The civilization that produced them was old and very corrupt, and like old and tired civilizations in many places, had forsaken gods who might be loved and worshipped only the gods who kept the stronger hold of fear. Beelzebub was an especially repulsive deity, for he was the Baal of Buzzing Things, that is to say, the God of Flies. No wonder the Israelites, whose whole religious ceremonial centered around keeping themselves and possessions clean, hated him.

The Baalim were killers, demanding bloody sacrifice. What more appropriate acolytes could such a god want than flies? The followers of Yaweh did not know what bacteria are, nor that flies carry them. But their religion taught them that uncleanness and ungodliness are very much akin, and their common sense made it plain that a god whose pet animals were the offspring of filth was no god at all, and had better get down among the demons where he belonged.

Science News-Letter, September 3, 1927

I think there will probably be a war worse than the Great War within a century, and it is perfectly possible that it may prove fatal to our particular type of civilization. At the present time the main thing science can do is to make them unprofitable for the victors as well as the vanquished.—J. B. S. Haldane.

Science News-Letter, September 3, 1927

## Defends Oats Physiology

The paradoxical situation of a Scot denouncing oatmeal as a deficient article of diet and of an American defending "the halesome parritch" has arisen out of the experiments of Prof. Edward Mellanby at the University of Sheffield and of Prof. Harry Steenbock at the University of Wisconsin.

It is agreed among all physiologists that any cereal taken alone is deficient in vitamin D, which prevents the disabling bone disease, rickets, in children and young animals. Some time ago Prof. Mellanby got results with oatmeal fed to puppies that were so much worse than those that followed a diet of other grain products that he assumed the presence of an unknown substance in oats, with action opposite to that of the vitamins, which he named "toxamine."

Now Prof. Steenbock, one of the outstanding authorities on the formation and activities of vitamin D, states that he has very carefully repeated Prof. Mellanby's oatmeal experiments. He asserts that while he finds oats to be somewhat inferior to wheat in the matter of preventing rickets, he can find no evidence that they are as bad as Prof. Mellanby paints them, and that he is not convinced of the existence of the hypothetical toxamine.

While an exclusively cereal diet is practically certain to bring on an attack of rickets, Prof. Steenbock adds that as ordinarily used, with the addition of other foods of high calcium content they are valuable elements in the diet. Cereals themselves may be given an adequate vitamin D content by exposure to ultra-violet rays.

Science News-Letter, September 3, 1927

### ARCHAEOLOGY

## 4000 Year Old House Plan

An architect's drawing, believed to be by far the oldest in the world, discovered in Mesopotamia, is described by Dr. J. Stur, a Viennese engineer. This 4000-year-old equivalent of a blueprint was in a fragmentary condition, but three of the pieces fit accurately together, showing part of the ground plan of what must have been a very large house.

The walls and doorways for 17 rooms are indicated by accurately and cleanly drawn lines, and cuneiform notes give the dimensions. The largest room was 40 by 46 feet, and the scale of the drawing is 1 to 360.

Science News-Letter, September 3, 1927

## The Platypus

(A book devoted entirely to the platypus has been published in Australia.)

The Australian duck-billed old Platypus,

An amphibious mammal who ought to be sung,

*Ornithorhynchus paradoxus*, monotrematous,

Digs a nest and lays eggs, but suckles her young.

Papa Platypus tucks back the web on his feet

To dig in the bank a fifty-foot home. . . .

Rooms for sleeping and resting—the last one is neat,

Lined with soft things, the nursery is snug in the loam.

The Platypus swims with the tip of his head

Sticking up above water, his eyes and his ears

Closed up in their grooves, but on land it is said

He walks miles with them open—he sees and he hears.

He can fast, if he must, but the prawns and the worms

That he digs with his bill and daily requires,

Weigh half his own weight, a wise student affirms. . . .

He swims out twice a day and grubs river-bed mires.

The babies can growl and their parents have words

Including a call-note. No harm is to tell,

Though they bite with their bills as do many birds

And the males have sharp spurs on their hind-feet as well.

The zoologist calls him a great living link;

Prays enforcement of laws to protect his survival. . . .

Selfish man wants the Platypus fur. Does he think

Of destroying a species, biologic deprival?

—Gladys Moon Jones.

Science News-Letter, September 3, 1927

Science always was revolutionary and heterodox: it is its very essence to be so: it ceases to be so only when it is asleep.—George Sarton.

Science News-Letter, September 3, 1927

Nothing beautiful can be separate from life and life is that which dies.—Paul Valery.

Science News-Letter, September 3, 1927

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*A Contribution to the Science and Teaching of Anatomy*

BY

Victor E. Emmel

*Professor of Anatomy, College of Medicine, University of Illinois  
Laboratory Guest at The Wistar Institute of Anatomy and Biology*

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Although a minimum encroachment upon individual initiative is evaluated as a dominant objective to be sought, concise statements are given for the more difficult incisions and dissections involved in the demonstration of the structures listed. The order in which the regions are dealt with is based upon a sequence which facilitates observation of those structural relationships of greatest practical significance. The work consequently constitutes a basis for a direct correlation of anatomical terminology and structure in the practical study of the cadaver and presents a résumé of regional and systematic anatomy for anatomical and clinical reference.

This book of about 250 pages, illustrated with twelve plates and figures in delineation of surface anatomy and surface projections of the skeleton, will be ready September 15, 1927. Price, \$3.50, bound in cloth.

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## First Glances at New Books

**PRIMITIVE HEARTHES IN THE PYRENEES**—Ruth Otis Sawtell and Ida Treat—*Appleton* (\$3). A pleasant semi-popular account of a summer's meanderings among the famous caves near the Spanish border. Illustrations by the artist-husband of one of the authors revivify the cave drawings of the Old Stone Age.

Science News-Letter, September 3, 1927

**THE INNER WORLD OF CHILDHOOD**—Frances G. Wickes—*Appleton* (\$3). The mental and emotional life of the child analyzed by psychological methods for the benefit of parents, educators and all those interested in child development.

Science News-Letter, September 3, 1927

**HOW A TREE GROWS**—William Somerville—*Oxford University Press*. Detailed account of biology of tree growth intended primarily for forestry students.

Science News-Letter, September 3, 1927

**THE CLEANLINESS JOURNAL**—*Cleanliness Institute*. A new publication "published occasionally," to further the cause of cleanliness as a route to health and well being.

Science News-Letter, August 13, 1927

**POLLAK PRIZE ESSAYS**—R. W. Souter, Frederick Law Olmsted, C. F. Bickerdike, Victor Valentinovitch Novogilov—*Pollak Foundation for Economic Research: Newton, Mass.* This book consists of criticism of the economic theses advanced in *Profits*, by W. T. Foster and W. Catchings.

Science News-Letter, September 3, 1927

**HANDBOOK OF THE COLLECTION OF MUSICAL INSTRUMENTS IN THE UNITED STATES NATIONAL MUSEUM**—Frances Densmore—*U. S. Government Printing Office*. Not just a guide to the objects in one famous museum collection, but a great deal of interesting information regarding musical instruments from the gong of the savage to the violin and the hurdy-gurdy.

Science News-Letter, September 3, 1927

**MORTALITY STATISTICS**—U. S. Bureau of the Census—*Government Printing Office* (\$2.25). Latest report of mortality statistics of the death registration area of the United States and Hawaii.

Science News-Letter, September 3, 1927

Religion itself is one of the most striking possible examples of evolution.

—R. A. Millikan.

Science News-Letter, September 3, 1927

## SOCIOLOGY

### "Unfitness" Not Encouraged

"Survival of the unfit," a stock objection by hard-boiled critics of public health work, was declared to be a bogey conjured up by the perfervid imaginations of persons to whom a little learning has proved a dangerous thing, by Prof. H. S. Jennings, of the Johns Hopkins University, one of the world's foremost students of evolution, genetics and eugenics, who spoke at the recent meeting of the National Tuberculosis Association, in Indianapolis.

Fitness, Prof. Jennings pointed out, is only a relative term, and an individual at whom the finger of scorn is pointed, as being "unfit" so far as resistance to tuberculosis or some other ailment is concerned, may be very "fit" indeed when it comes to doing useful work in the arts, sciences or business. Wipe out the disease, as yellow fever has been wiped out, diphtheria is being wiped out, and as tuberculosis can be, and the "unfitnesses" of the persons now susceptible to them automatically disappear, for there is nothing left for them to be "unfitted" to. Therefore to argue that nothing should be done to control diseases that take large toll of human life is not merely harsh and inhuman, but silly, in the opinion of Prof. Jennings.

"For most of the matters with which the public health worker deals there appears to be no indication whatever that the individuals preserved are undesirable, or at a disadvantage in a world in which the attacking agent has been controlled, no indication that defective genes are playing an important role," he stated.

Science News-Letter, September 3, 1927

## ASTRONOMY

### Jupiter Moon Pulled By Sun

Though it revolves once in three years around a planet 483,000,000 miles from the sun, the ninth moon of Jupiter is strongly influenced by the sun. Dr. Seth B. Nicholson, of the Mt. Wilson Observatory, who discovered the moon in July, 1914, reported subsequent observations of the tiny satellite.

Moon No. 9 is one of the faintest bodies known to astronomers, for it is of the nineteenth magnitude, and observable only with the very largest telescopes. Since 1914 Dr. Nicholson has made several series of observations of his protegee. The last series was made when Jupiter, the parent planet, had made one complete revolution around its orbit since the moon was discovered.

Science News-Letter, September 3, 1927

## ENTOMOLOGY

### Honey-Cask Ants

Quotation from *THE ANT PEOPLE*. Hans Heinz Ewers—Dodd, Mead.

The larvae of the Honey-cask Ants are not distinguishable from one another, save in size; even the young, barely hatched workers, differ in size alone. It is true, indeed, that the majority of the Honey-casks belong to the larger order of workers, yet we do find many of medium size and some quite small. The large ones could not survive without the others to help. How it came about all at once that individual workers were altered into Honey-casks, we do not know, yet it is certain that the choice of this self-sacrificing office is made from earliest infancy. A number of the newly hatched workers manifest by their extraordinary power of food consumption the tendency to devote themselves to becoming casks, and at once they are fed more and more; fattened like the Moorish brides. Then one after the other is led into the honey cellar, and these they hang to the roof side by side with many others already there.

From that very hour, all their lives long, they are Honey-casks, and nothing else. From time to time they let a few drops pass from the community-stomach into their private stomach, but only enough to keep them alive. The opening and closing of the passage between the two stomachs is controlled by them, just like the opening and closing of the spigot, for that is the only correct name for their mouths. They have no other business than the continuous uninterrupted clinging to the roof with their feet, which have now become mere hooks, so as to carry the weight of the heavy casks. It is a tremendous strain upon their muscles, one which we humans can hardly conceive. During the lean months of the year, every ant who wants to eat goes into the cellar to the first cask it reaches. The cask opens its spigot; the ant drinks what it wants; the spigot closes. During the brief period of filling the cask the process is reversed. The honey-gatherers bring the sweet liquid home in their crops and pour it into the willingly opened bung-hole in the living casks.

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Disputes are multiplied as if everything was uncertain; and these are managed with the greatest warmth as if everything was certain.—*Hume*.

Science News-Letter, September 3, 1927

# How to Use Key-Word Feature of News-Letter

In order to aid in catching the items that concern you and to facilitate clipping and filing, a key word in small capitals has been printed on the right of the line above each article. The key words used fit into any system of classification, whether it be a straight alphabetical file, a system of your own devising, the Library of Congress classification or the Dewey system.

Note that you can slip out any article without fear of damaging another article in which you might be interested, since editorial matter printed on the right-hand pages is backed by advertising, standing matter or a continuation of the article on the other side.

## Library of Congress Classification

The classification of the Library of Congress has come into common use in the libraries of the country owing to the publication of the Government of the card index of all new books. We print below a list of the subject titles which are most used in the SCIENCE NEWS-LETTER. The full scheme of classification is contained in "Outline Scheme of Classes," issued by the Library of Congress.

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B	Philosophy.
BF	Psychology.
G	Geography, voyages, travel.
GA	Mathematical and astronomical geography.
GB	Physical geography.
GC	Oceanology and oceanography.
GF	Anthropogeography.
GN	Anthropology. Somatology. Ethnology. Ethnography. Prehistoric archaeology.
GR	Folklore.
GT	Manners and customs.
GV	Sports and amusements. Games.
HC	Economic history and conditions. National production.
HD	Economic history. Agriculture and Industries.
HE	Transportation and communication.
HF	Commerce.
HM	Sociology. General.
HQ	Family. Marriage. Woman.
HV	Social pathology.
L	Education.
M	Music.
N	Fine arts.
P	Philology and linguistics.
Q	Science. General.
QA	Mathematics.
QB	Astronomy.
QC	Physics.
QD	Chemistry.
QE	Geology.
QH	Natural history.
QK	Botany.
QL	Zoology.
QM	Human anatomy.
QP	Physiology.
QR	Bacteriology.
R	Medicine. General.
S	Agriculture. General.

SB	Field crops. Horticulture. Landscape gardening. Pests and plant diseases.
SD	Forestry.
SF	Animal culture. Veterinary medicine.
SH	Fish culture and fisheries.
SK	Hunting. Game protection.
T	Technology. General.
TA	Engineering. General.
TC	Hydraulic engineering.
TD	Sanitary and municipal engineering.
TE	Roads and pavements.
TF	Railroads.
TG	Bridges and roofs.
TH	Building construction.
TJ	Mechanical engineering.
TK	Electrical engineering and industries.
TL	Motor vehicles. Cycles. Aeronautics.
TN	Mineral industries. Mining and Metallurgy.
TP	Chemical technology.
TR	Photography.
TS	Manufactures.
TT	Trades.
TX	Domestic science.
U	Military science. General.
V	Naval science. General.

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020	Library economy
030	General cyclopedias
040	General collected essays
050	General periodicals
060	General societies
070	Newspapers
080	Special libraries. Polygraphy.
090	Book rarities
100	PHILOSOPHY—
110	Metaphysics
120	Special metaphysical topics
130	Mind and body
140	Philosophical systems
150	Mental faculties. Psychology
160	Logic
170	Ethics
180	Ancient philosophers
190	Modern philosophers
200	RELIGION—
210	Natural theology
220	Bible
230	Doctrinal. Dogmatics. Theology
240	Devotional. Practical
250	Homiletic. Pastoral. Parochial
260	Church. Institutions. Work
270	Religious history
280	Christian churches and sects
290	Ethnic. Non-Christian
300	SOCIOLOGY—
310	Statistics
320	Political science
330	Political economy
340	Law
350	Administration
360	Associations. Institutions
370	Education
380	Commerce. Communication
390	Customs. Costumes. Folklore
400	PHILOLOGY—
410	Comparative
420	English
430	German
440	French

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460	Spanish
470	Latin
480	Greek
490	Minor Languages
500	NATURAL SCIENCE—
510	Mathematics
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550	Geology
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## Anniversaries of Science

**September 9, 1892**—A small inner satellite of Jupiter was discovered by Professor E. E. Barnard at Lick Observatory. This was the first satellite discovered since Galileo saw four in 1610.

Nothing of special importance was encountered until the night of September 9, when, in carefully examining the immediate region of the planet Jupiter, I detected an exceedingly small star close to the planet and near the third satellite. I at once measured the distance and position angle with reference to satellite III. I then tried to get measures referred to Jupiter, but found that one of the wires had got broken, and the other loosened. Before anything further could be done the object disappeared in the glare about Jupiter. Though I was positive the object was a new satellite, I had only the one set of measures, which was hardly proof enough for announcement.

I replaced the wires the next morning. The next night with the great telescope, being Prof. Schaeberle's, he very kindly gave the instrument up to me, and I had the pleasure of verifying the discovery, and secured a good set of measures at elongation.

Just what the magnitude of the satellite is it is at present quite impossible to tell. Taking into consideration its position, however, in the glare of Jupiter, it would perhaps not be fainter than the thirteenth magnitude.

—Barnard: in the *Astronomical Journal*, 1892.

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### GEOLOGY

#### School on Wheels

Blazing a new trail of geological instruction and research, the Princeton University Summer School of Geology and Natural Resources has just completed a 10,000-mile train tour across Canada, during which a vast variety of geological phenomena were studied.

Through the use of a special Pullman car, combining the features of classroom, dormitory, dining hall and recreation center, the Princeton geology class was able to go from one side of the North American continent to the other, stopping where the rocks themselves could teach the best lessons. During the day an interesting locality is visited, just before dinner time the class returns to its traveling home. Dinner is served, a lecture held and a night's rest obtained while the party is en route to another locality, hundreds of miles away.

Rocks telling their own stories, embedded fossils revealing the life of past ages, contorted strata telling of ancient cataclysms, minerals that to the unpracticed eye disguise precious

metals, mines and mills in which metal is being obtained from ore—these field exhibits are more effective than the most adequate lectures and classroom illustrations.

The tour was organized and directed by Prof. Richard M. Field, of Princeton. In addition to the undergraduate institution of geological train-tour, there was opportunity for brief intensive research. This year the Princeton party had as its foreign guests Dr. E. B. Bailey, director of the Scottish Geological Survey, and Dr. Leon W. Collet, dean of the school of science and head of the department of geology at the University of Geneva. These two eminent geologists were eager to see how the American Rockies and other geological features of the North American continent compared with the geology of their native lands. With Prof. Homer P. Little, of Clark University; Prof. W. L. Porter, of Davidson College; Dr. Elwyn L. Perry, of Princeton, and Dr. Field, these two European geologists furnished constructive discussion and study of the many formations and mineral occurrences visited.

During its tour the party visited the Ordovician section at Bellefonte, Pa.; Niagara Falls, the interglacial beds at Toronto, the Sudbury nickel district, the Port Arthur district, the pre-Cambrian area at Mine Centre, coal at Brule, the splendid examples of structural geology at Jasper Park, Victoria, Vancouver, Copper Creek, Albert Canyon, Lake Louise, Banff, Calgary and the Turner Oil Fields, Winnipeg; the Porcupine gold area, the paper mill at Iroquois Falls, the Cobalt silver area, Ordovician sections at Ottawa, asbestos mines and mills at Black Lake and Thetford, and the formations at Quebec.

The students who made the trip included R. M. Fuller, Princeton, '26; L. Whitcomb, Brown, '02; N. W. Jeffers, Princeton, '26; D. C. Champin, Princeton, '27; W. M. Angle, Princeton, '28; L. Corning, Jr., Princeton, '28; W. A. Humphreys, Jr., Princeton, '28; F. S. Allen, Princeton, '29; C. S. Bromley, Jr., Princeton, '29; E. F. Durand, Princeton, '29; R. F. Schermerhorn, Princeton, '29; J. M. Snowden, Princeton, '29; R. F. Norris, Princeton, '29; C. Breuer, Princeton, '29; J. A. R. Bailey, Princeton, '29; P. J. O'Neil, Princeton, '29; H. H. Hess, Yale, '27; E. W. Hard, Cornell, '28.

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### SOCIOLOGY

#### All Populations Grow Alike

Peoples rise, flourish a while in their prime, then dwindle away until no increase in their population growth is perceptible at all, all in accordance with a universal law. Such is the gist of the address made recently by Dr. Raymond Pearl, director of the Institute for Biological Research at the Johns Hopkins University, before delegates to the World Population Conference meeting at Geneva.

This characteristic manner of growth which he maintains holds good not only for human populations but for living organisms of all sorts Dr. Pearl described as follows:

"The population at first grows slowly, but gains impetus as it grows, passing gradually into a stage of rapid growth, which finally reaches a maximum of rapidity. After this stage of most rapid growth the population increases ever more and more slowly, until finally there is no more perceptible growth at all, in short, the populations of various forms of life first wax in their speed of growing and then wane."

"Furthermore," he declared, "it has been demonstrated statistically that populations of human beings have grown according to the same type of curve, so far as may be judged from the available records, in at least the following countries: Sweden, United States of America, France, Austria, Belgium, Denmark, England and Wales, Hungary, Italy, Norway, Scotland, Servia, Japan, Java, Philippine Islands, Baltimore City, New York City, and the world as a whole. In the case of the countries named the census records do not extend over a sufficiently long time to make the case conclusive that population growth, if undisturbed, would follow in human groups the complete course exhibited by the yeast population just discussed. The available data only make such a conclusion probable. And one cannot conduct experiments with human beings on this point, as can be done with lower organisms. But fortunately it has been possible to find one group of human beings, the indigenous native population of Algeria, in which a cycle of population growth has been practically completed during the period for which census records are available, these having been carefully made by the French. In this case the human population followed in its whole cycle of growth a curve of the same characteristic form that has been discussed for the yeast."

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## The Problem of Translation—

Science, probing the unknown universe, writes its findings in cryptic language. A stellar galaxy shining faintly in the heavens hides its splendor and its immensity in numbers and formulæ; a minute germ has thrust upon it a long Latin name. With the aid of such scientific shorthand and such technicalities, science pushes on to new discoveries and new heights.

Yet the facts and the methods of science must penetrate and permeate the whole fabric of civilization if the world is to become an increasingly better place to live in. The man in the street, the child in the school, the merchant in the counting house, the judge on the bench, the priest in the temple, all of those who make the world, must know, appreciate, understand and cherish the spirit of research and the power of thought.

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